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Fullerton

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[54] **FAST LOCKING MECHANISM FOR CHANNELIZED ULTRAWIDE-BAND COMMUNICATIONS**

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Related U.S. Application Data

[63] Continuation of Ser. No. 487,990, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 309,973, Sep. 20, 1994, Pat. No. 5,677,927, and a continuation-in-part of Ser. No. 428,489, Apr. 27, 1995, Pat. No. 5,687,169.

[51] **Int. Cl.**[6] **H04B 1/69**

[52] **U.S. Cl.** **375/210**; 375/208; 375/355

[58] **Field of Search** 375/208, 210, 375/327, 355, 367, 371

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[57] **ABSTRACT**

A receiver for acquisition and lock of an impulse radio signal comprising an adjustable time base to output a sliding periodic timing signal having an adjustable repetition rate, and a decode timing modulator to output a decode signal in response to the periodic timing signal. The impulse radio signal is cross correlated with the decode signal to output a baseband signal. The receiver integrates T samples of the baseband signal and a threshold detector uses the integration results to detect channel coincidence. A receiver controller stops sliding the time base when channel coincidence is detected. A counter and extra count logic, coupled to the controller, are configured to increment or decrement the address counter by a one or more extra counts after each T pulses is reached in order to shift the PN code modulo for proper phase alignment of the periodic timing signal and the received impulse radio signal.

15 Claims, 12 Drawing Sheets